

## Book Reviews

**Bioorganic Chemistry: Nucleic Acids.** Edited by Sidney M. Hecht. Oxford University Press, New York. 1996. viii + 500 pp. 17 × 24 cm. ISBN 0-19-508467-5. \$59.95.

As explained in the editor's preface, the volumes in this series have been written specifically to support the teaching of graduate students. "Each book is written as a set of chapters whose numbers approximate the number of weeks in a semester, and whose subject has been identified as critical to an appreciation of ongoing research activity... (t)he chapters are organized in much the same fashion as lectures in special topics courses."

The present volume, which considers nucleic acids, comprises 14 chapters devoted to chemical and enzymatic preparative methods, nucleic acid structure and methods of structural determination, nucleic acid interactions with metal ions, small molecules, and proteins, antisense/antigene oligonucleotides, catalytic RNA, and the polymerase chain reaction. About two-thirds of the chapters are written by academic researchers; the remainder is authored by industrial and institutional experts.

The organization of the chapters developed by the editor includes a consideration of basic principles, a summary of key findings, an overview of current research, and a further detailed discussion of selected illustrative studies. In general, the editor and his contributors have succeeded admirably in producing a modestly priced book that will be very useful, not only for its target audience of students but for anyone wishing to have a concise yet thorough overview of the field. A broad expanse of information is presented in a clear manner, is well illustrated by many structural formulae and diagrams, and is extensively documented by literature citations.

Of particular interest to the medicinal chemist are the discussions of ligand–DNA interactions undertaken in Chapters 4 and 9–12. A nice treatment of the noncovalent bonds involved in such interactions is presented by Larson and Verdine, who emphasize the factors affecting the influence of these bonds on *specificity* versus their effect on *affinity*—a distinction not always appreciated in medicinal chemistry textbooks. The important topic of small molecule–DNA interactions as exemplified by several major antitumor agents is lucidly expounded by Mountzouris and Hurley, whereas antisense and antigene oligonucleotides, with their potential for a new era in medicinal chemistry and drug discovery, are ably considered by Miller.

I found the peculiar arrangement of collecting the bibliographic citations for each of the chapters at the back of the volume to be awkward, in that a particular citation has to be located first by chapter and then by its alphabetical placement. One wonders what advantage this arrangement has over the more usual practice of listing the citations at the end of each chapter or, alternatively, of placing a cumulative list of citations for the entire book at the end of the volume. And as a chemist raised on the texts by Louis Fieser, who always managed to include some brief remarks concerning the

chemists whose minds and hands had produced the findings he was explaining, I would have hoped for a modicum of similar discussion regarding the scientists whose achievements are chronicled in this fine exposition. This book should be favorably considered for acquisition by faculty for their graduate classes in the field, by workers in the field, and by academic and insitutional libraries.

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**Regulatory Protein Modification. Techniques and Protocols. Neuromethods. 30.** Edited by Hugh C. Hemmings, Jr. The Humana Press, Totowa, NJ. 1997. xiv + 445 pp. 16 × 23.5 cm. ISBN 0-89603-415-1. \$75.00.

Volume 30 in the *Neuromethods* series, edited by Alan A. Boulton and Glen B. Baker, focuses on the posttranslational modification of proteins in neurons, an important element of neuronal function. The most prominent mechanism in the regulation of protein function in signaling pathways, i.e., protein phosphorylation, is emphasized, although newer mechanisms are also covered.

The first six chapters address various techniques relevant to the study of protein phosphorylation in the nervous system. Site-directed mutagenesis, a technique of molecular analysis recently applied to the identification and characterization of sites of protein modification, is detailed in Chapter 7. Chapter 8 describes technical approaches to the study of protein methylation. S-Palmitoylation, a recently recognized component of neuronal signal transduction, is reviewed in Chapter 9. Recently identified neuronal ADP–ribosylation and related analytical techniques are the subject of Chapter 10. The final chapter is devoted to techniques used to study protein glycosylation and glycoposphatidylinositol anchoring, mechanisms of current interest in the regulation of plasma membrane proteins.

This volume provides a useful reference for molecular neuroscience researchers concerned with cell signaling, cell biology, and neurochemistry. Medicinal chemists, as well as other neuroscientists, molecular biologists, and pharmacologists concerned with posttranslational protein modification, will benefit from this book.

**Staff**

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**Bioconjugate Techniques.** By Greg T. Hermanson. Academic Press, San Diego, CA. 1996. xxiii + 785 pp. 18 × 26 cm. ISBN 0-12-342335-X. \$99.00. \$49.95 (pbk).

Bioconjugation involves the linking of two or more molecules to form a novel complex having the combined properties of its individual components. The technology of bioconjugation has affected many areas of biology and shows promise to extend into many more aspects of medicinal chemistry than are presently involved. There is a perceived need for a one-volume compendium with utility as a source of information for the novice as well as a ready resource for more experienced practitioners. This volume serves both functions.

The book is divided into three sections: Bioconjugate Chemistry, an introduction and an overall view of functional targets and the chemistry of reactive groups; Bioconjugate Reagents, which addresses the various strategies and the appropriate functional group chemistry involved in the processes; and Bioconjugate Applications, in which practical aspects, including specific protocols for an impressive number and variety of bioconjugation technologies, are discussed in some detail and at some length.

This is a well-organized and well-written book; it is readable and comprehensible to the novice (like this reviewer), but its content and stylistic approach seem sufficiently sophisticated to appeal to active, knowledgeable workers in the field. It is an impressive compilation of useful theoretical and practical information that is not readily available elsewhere in a single volume. The subject material is well and carefully addressed. All sections of the book have a strong organic chemistry flavor; chemical structures, equations, and synthetic flow diagrams are employed extensively and appropriately. Structures are carefully drawn, and few errors were noted. The entire book is well documented and referenced; the bibliographic section is at the end of the volume and consists of approximately 1000 citations. Numerous references to literature of the 1990s, as well as older citations, are included.

The author's efforts have provided not only a useful reference work but also a book that could serve as the basis or a reading resource for a graduate-level course for students of medicinal chemistry, pharmacology, biochemistry, or pharmaceuticals. This book is recommended to workers and aspirants in the fields of bioconjugate preparation and utilization.

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**Annual Reports in Medicinal Chemistry. Volume 31.** Editor-in-Chief: James A. Bristol. Academic Press, Inc., A Division of Harcourt Brace & Co., San Diego, CA. 1996. xi + 413 pp. 17 × 25 cm. ISBN 0-12-040531-8. \$70.00 (pbk).

This is Volume 31 in a series sponsored by the Division of Medicinal Chemistry of the American Chemical Society. It is so important to medicinal chemists that all members of the Division receive copies. This volume, like its predecessors, provides timely and critical reviews, usually of 10 pages or less and exhaustively referenced, of important established and emerging topics in the biological sciences which are anticipated to be of major current interest and to provide the basis for future drug therapies. The 35 chapters in the book form the basis for seven sections that are entitled as follows: (I) Central Nervous System Diseases, (II) Cardiovascular and Pulmonary Diseases, (III) Cancer and Infectious Diseases, (IV) Immunology, Endocrinology, and Metabolic Diseases, (V) Topics in Biology, (VI) Topics in Drug Design and Discovery, and (VII) Trends and Perspectives. Each chapter is written by an active researcher and expert in the field and is up-to-date to early 1996.

As in other recent volumes, the emphasis of the chapters is in favor of specifically focused and mechanistically oriented chapters intended to inform the reader of the most important results in a new area of research as opposed to an annual update of an established field. Thus, newer topics addressed in Sections I–IV include neuropeptide Y, gonadal steroid receptors, P<sub>2</sub> purinoreceptors, PDE inhibitors, GPIIb/IIIa inhibitors, NK antagonists, chemotherapy of malaria, estrogen receptor modulators, cell adhesion integrins, obesity, osteoporosis, and MMP inhibitors. Section V, Topics in Biology, incorporates chapters on cell cycle, apoptosis, JAKs and STATs, proteasome, and MAP kinase. Section VI, Topics in Drug Design and Discovery, concentrates on mechanism-based drug discovery and newer technologies, e.g., new NMR methods, combinatorial chemistry, and plasma protein binding. The final section includes chapters that summarize new chemical entities (NCEs) introduced to the world's marketplace in 1995 (35, as compared to 44 in 1994 and 43 in 1993, but the same as in 1991 and 1992) and a historical chapter, The Protein Structure Project 1950–1959: First Concerted Effort of a Protein Structure Determination in the U.S.

Volume 31 of the *Annual Reports in Medicinal Chemistry* provides up-to-date reviews of topics of interest to all researchers, scientists, teachers, students, and administrators concerned with the development of new drug products. It is a must addition to the personal libraries of all medicinal chemists.

**Staff**

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